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SPOTLIGHT

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This Spotlight examines decision intelligence platforms and how payers and pharmaceutical companies can utilize the technology for competitive advantage.

Decision Intelligence for Healthcare Payers

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Introduction: Decision Intelligence Defined

Decision intelligence (DI) is a recent development in the application of artificial intelligence (AI) to make business decisions at scale. It is derived from an engineering discipline that augments data science with theories from social science, decision theory, and managerial science. At its core, it provides a framework for best practices in organizational decision making and processes for applying machine learning (ML) at scale. The core idea is that decisions are recommendations of actions, based on our understanding of data, that lead to outcomes. Decision intelligence is a discipline for analyzing this chain of cause and effect, and decision modeling is a visual language for representing these chains.

AT A GLANCE

WHAT'S IMPORTANT

- Decisions are recommendations of actions based on our understanding of data that lead to outcomes.
- Decision intelligence is the application of artificial intelligence to automate decisions within processes by using all data, including unstructured data.
- Decision intelligence unifies complex systems, machine learning, and decision analysis.
- The decision model will recommend and implement a particular action.

Decision intelligence is based on recognition that in many organizations, decision making needs to scale to support the explosion of processes and transactions for digital organizations. DI seeks to automate manual processes employed by organizations, by learning from historical decisions, improving the quality and relevance of data for making decisions, and providing transparency in the quality and effectiveness of decisions within organizational processes.

Commercially, decision intelligence is the enterprise's ability to make smarter decisions by analyzing large amounts of data to determine how actions lead to better outcomes. It provides an ability to evaluate decisions made within processes, their actions, and the correlation of these actions to outcomes, while providing the necessary transparency and performance. Decision intelligence is a necessary improvement required for organizations looking to support digital scale. DI supports the movement from largely informal structures of decision making within processes to one in which a decision is documented with an explanation and echoes the creation of common blueprint methodologies in construction, with the promise of similar benefits. The process encompasses exploring, analyzing, and fully understanding data-driven facts, which helps organizational stakeholders make more informed decisions, enact better policies, and implement more effective practices that serve to move the needle toward greater business success effectively.

Decision intelligence is both a very new and also a very old discipline. Many of its elements — such as the language of assessing assumptions, using logic to support an argument, the necessity of critical thinking to evaluate a decision, and understanding the impacts of bias — are ancient. Yet the realization that these elements can form a coherent whole that provides significant benefits to organizations by focusing on a common methodology grounded on modern technological advancements is relatively new.

The Environment

Corporations, economists, and social scientists are working together with technologists using AI and ML, as well as complex system theory, simulation, optimization, and game theory algorithms, to create decision intelligence. But, until now, these areas of study have remained separate from each other. Decision intelligence — which many experts agree is the next step in the evolution of AI — coordinates human decision makers with data, models, and more.

Decision intelligence works through the following five sequential steps:

- **Observe.** The model begins with collecting all relevant information from a variety of sources: historical and transactional, behavioral and attitudinal, structured and unstructured, transient and persistent, and external and internal. Whatever information you collect will assist in recreating the outcome, informing other stakeholders and departments, or improving processes.
- **Investigate.** The data, once collected, is analyzed against the ideal outcomes and the information that is gathered, the actions performed, and the outcomes achieved.
- **Model, considering existing business capabilities to produce relevant actions.** Because organizations cannot always see the complete picture, these actions must explain causalities that lead to other scenarios. The models are then trained to arrive at the recommendations of actions required to achieve these outcomes. The recommendations of actions is the output provided by a decision intelligence solution. Decision model dependency links can be modeled using machine learning. In this respect, decision intelligence can be seen as a "multi-link" extension to artificial intelligence, which is most widely used for single-link analysis. From this point of view, machine learning can be viewed as answering the question: If I know/see/hear X, what can I conclude? — whereas decision intelligence answers the question: If I take action X, what will be the outcome? The latter question usually involves chains of events, sometimes including complex dynamics like feedback loops. In this way, decision intelligence unifies complex systems, machine learning, and decision analysis.
- **Contextualize.** Model fusion (the process of joining data from multiple modalities with the aim of extracting complementary and more complete information) contextualizes the range of recommendations from individual models and synthesizes them in optimum decisions based on confidence scores and probabilities using AI. The synthesis of the most optimized decision is one of the key aspects of decision intelligence.
- **Execute.** Ultimately, the decision model's recommendation will be implemented as an action. This step also includes measuring the action's impact to improve the model.

Benefits

Decision intelligence offers many benefits for organizations willing to implement its use, but the following four predominate:

- **Improved decision making.** IDC predicts there will be 175ZB of data worldwide by 2025, much of it unstructured. That's 175 billion TB — imagine if all 7 billion people on Earth had a 1TB hard drive in their computer, which is common. 175ZB of data would fill the computers of 25 Earths. Humans will be unable to process this massive volume of data manually. Instead, organizations will need to use decision intelligence combined with advanced

machine learning algorithms to augment and improve human decision-making capabilities in these increasingly complex systems.

- **Faster decision making.** A second benefit is that decision intelligence helps reduce decision latency, the time it takes to decide. The larger the organization, the more complex the decision-making process is. Slow decisions impede not only progress but profitability as well. Machines process information quickly, helping reduce the risk of unforeseen outcomes without slowing the process itself.
- **Eliminating biases.** Machines can also help reduce biases humans run into when considering the types of decisions that need to be made. For example, a person's preference for doing things a certain way could lead an enterprise to favor one approach over another despite growing evidence to the contrary. Decision intelligence can help overcome these pitfalls.
- **Continuous improvement and learning.** With the ability to constantly measure the recommendations, their confidence, and an ability to correlate the impact of the decisions with outcomes, decision intelligence effectively creates an ever-improving automated decision-making system for an organization using this feedback loop. This continuous improvement not only offsets the loss of wisdom from attrition but also constantly improves the decision quality within the enterprise.

Key Trends for Payers

From a payer's point of view, decision intelligence is the process that facilities a business taking all data, including unstructured data, and automates decision making and leverages AI to manage the administrative and clinical functions associated with claims processing, payment, audit, and clinical review. The use cases in the sections that follow show how DI can be applied for payer competitive advantage.

Claims Digitization and Adjustment Automation

Over 20% of all claims are submitted as physical copies with several supporting documentation across pre-authorization letters, medical charts, and so forth that are unstructured and machine unreadable, requiring high amounts of manual effort in processing them. Manual processing drastically increases costs, increases errors, and increases processing time, leading to potential risks to the organization. The application of decision intelligence on this process can be summarized as follows:

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- Paper claims are loaded into a claims processing solution:
  - Claims are digitized using iOCR and digital extraction coupled with medical models for extraction, enrichment, validation, and entity linking.
  - Supporting documents of each claim are retrieved and then linked to each medical claim.
  - Supporting documents are digitized, redundancies are removed, and the entire claim record is consolidated and then loaded back into the central database.

- ML models are then executed on the data for predictive adjudication to predict the outcome of adjudication at the time of intake. The outcome of prediction is validated against all outputs along the pipeline.
- AI models are leveraged to identify claims that have a high probability of adjustment based on systemic adjudication and would require manual review. In this scenario, claims are identified that are likely pending manual review or are likely to get rejected.

Claims Administrative Audit

Medical claims are complicated and costly if not managed correctly. Generally, a claims audit of any kind can:

- Find errors made in medical billing.
- Find methods for improving recovery opportunities.
- Ensure a medical practice is adhering to the latest compliance regulations governing medical claims.

There are several opportunities in this area such as:

- Claim audits are selected randomly to comply with contractual and regulatory audit purposes and currently see <$10 million cost savings each year.
- Less than 1% of claims are audited given the limitations of manual processing.
- Predictive error capabilities do not exist to enable risk-based auditing.
- The audit findings are not fed back into a predictive error analytics engine connected to the claim adjudication process, which could prevent errors from occurring prior to claim finalization, leading to greater identification of fraud.

The application of decision intelligence on this process can be summarized as follows:

- Risk-based auditing techniques are applied to focus on identifying and correcting a higher volume of claim errors.
- False positives in error claim identification are reduced, leading to a focus on high-value claims causing maximum business impact
- Increased automation of contractually required audits is enabled to reduce capacity required.
- Error-prone claims are suspended prior to finalization to ensure accuracy.
- Cost savings are increased for the enterprise.
- Risk is mitigated on the entire claim population.

Payment Integrity – Coordination of Benefits

The coordination of benefits (COB) transaction is the transmission from any entity to a health plan for the purpose of determining the relative payment responsibilities of a health plan for healthcare claims or payment information. COB

applies to a person who is covered by more than one health plan. On an average, it takes a plan nearly 5x longer to settle a COB claim compared with a regular claim. The application of decision intelligence on this process can be summarized as follows:

- Discover COB leads from data sources that are often underutilized/not integrated (e.g., customer service notes for benefit inquiries).
- Leverage advanced analytics and AI models to identify leads that have a high probability of COB, such as specific disease conditions, age, and demographics.
- Populate work queues for processors through a smart platform with an intelligent workflow to manage COB queues based on organizational priorities.
- Process COB records and update core membership information.
- Manage outreach to other payers/members to validate COB information, which automates primacy determination.
- Identify incorrect payments through internal and external data on validated COB leads.

Key Trends and Use Cases for Pharma

From a pharma point of view, decision intelligence is the process that facilities the business that takes data from multiple sources and in multiple formats, at a minimum including both structured and unstructured data and automate decision making by leveraging AI. This can be applied across the process of research and development (R&D), regulatory compliance, clinical trials, pharmaceutical company vigilance, and so forth. The use cases in the sections that follow exemplify using this approach for pharma competitive advantage.

Trials, a critical yet complex part of the R&D process, are a major cause of the high failure rates and costs associated with development of new pharmaceuticals.

Medical Charts Digitization for Clinical Trials

Pharma companies have been early and active adopters of artificial intelligence (AI) approaches for discovery of new pharmaceuticals and are starting to focus this technology on clinical trials.

Trials, a critical yet complex part of the R&D process, are a major cause of the high failure rates and costs associated with development of new pharmaceuticals. The traditional process, spanning three to six years with billions spent, no longer meets the requirements of the post-pandemic world. The entire process needs to be structured to drive R&D productivity, lower costs, and shorter timelines.

Pharma requires delivering medical charts as structured, processed, and enterprise-grade data sets for downstream analysis for selecting trial patients. Medical charts are unstructured documents that have no predefined format and contain critical information spread across the document. One vendor reported that over 60% of all data of over 75 million patients comes as faxes or paper-based documents — and these documents need conversion into electronic form.

Converting these documents into digital data sets is traditionally carried out by highly paid resources who performed the repetitive job of data entry, the data is updated daily, and the volume of information exceeds terabytes. The application of decision intelligence on this process can be summarized as follows:

- The electronic data is uploaded into a platform that runs AI and ML models to automatically parse and exact information from medical records.
- Extracted text and information are organized into a knowledge graph with the use of NLP and AI models for categorizing and classifying information
- The digitization solutions enable automatic discovery, identification, and confirmation of semantic relationships and between various medical and clinical data entities such as drugs, procedures, symptoms, and ailments.
- This enriched information is then worked on with a variety of ontologies to disambiguate the information contained to reach a high level of accuracy and eventually reach a point of structured digital record.

Adverse Event Reporting

Adverse event reporting (AER) is manually intensive because most decisions are made from unstructured documents. One vendor reported that less than 1% of documents reviewed contained actual adverse events related to their own drugs. The average time to review one document is 30 minutes. The application of decision intelligence on this process can be summarized as follows:

- Medical literature documents are loaded into a central database.
- Data is extracted from literature documents with medical models for extraction, enrichment, validation, and entity linking.
- The intelligent extraction is based on identification of key information including drug details, symptoms medication history, and time series of medical events.
- The information is scanned for identified adverse events, and the relevant information is then reviewed for publishing to regulatory authorities on critical adverse drug events.

As these technologies and business cases evolve, process analysis will identify systematic gaps between people and data and between people and each other that inhibit the effective use of AI and ML systems. Decision intelligence melds these for more effective judgment.

Considering Exponential AI for Decision Intelligence in Healthcare

Exponential AI (xAI) offers a production-ready healthcare decision intelligence platform, Enso; an integrated and reusable decision agent ecosystem; and deep domain expertise to enable clients to help take control of their AI journey.

Founded in 2019, Exponential AI has experienced substantial growth during 2020 with its low-code, no-code decision intelligence platform, Enso. The company has averaged over 100% revenue growth over the past couple of years, and its current expansion has put it on track for 150% growth in 2022.

Exponential AI's Enso claims acceleration of the overall life cycle of building, deploying, and scaling enterprise-grade decision intelligence solutions in healthcare that provide transparent, predictable, and explainable machine decisions to drive zero-latency processes at scale.

According to Exponential AI CEO John Keith, "We substantially increase the speed and success of AI implementations in healthcare organizations by enabling decision intelligence, continuous learning, real-time insights, domain understanding, and the rapid deployment of proven AI solutions. This is accelerating our own growth as we continue to accelerate the adoption of AI in some of the world's largest and most mission-critical organizations."

Exponential AI is headquartered in Atlanta, Georgia, and maintains a research and development center in Hyderabad, India. Exponential AI has partnered with leading Fortune 50 organizations across healthcare and life sciences.

Strengths

Enso's skillfulness in structuring pipelines, combining AI approaches, and leveraging domain knowledge, especially in healthcare has been key to its adoption across leading Fortune 500 companies.

Particularly interesting is xAI's approach to "decision agents," which are reusable building blocks and hyper-specialized, intelligent decision models that can be organized to deliver targeted outcomes in real time. These models learn and contribute back to collective knowledge and accuracy of the decisions being made.

Challenges

Making substantive changes to the manual processing layer of payers is fraught with cultural backlash. The operational personnel, the CFO, the actuaries, and the medical management departments are the lifeblood of this most regulated industry in the United States, and they don't like change. In addition, most finance and medical management departments like "homegrown" solutions. Looking to xAI, or any other hyper-automation vendor, is not in the DNA of the average operations department.

However, the macro variables described in this paper are undeniable. Flexible decision intelligence means faster innovative decision making and better collaboration, which are new requirements placed upon an industry already reeling from both internal and external pressures.

Conclusion

Simple spreadsheets, intuition, hardwired manual procedures and systems, and members that only paid attention to health insurance during open enrollment are now all in the rearview mirror for healthcare.

Payers and pharma systems need to evolve or be complemented to seamlessly interact with the entire:

- Roles of the customer (sales, marketing, service, consent, medical, claims, enrollment, premium, SDOH, wellness, and bundled payments)
- Provider-payer-pharma model (contracts, incentives, penalties, trials, care opportunities)
- Product paradigm (ancillary blends, product-of-one opportunities)
- Operational shift from pure insurance to being the patient's "partner in care"

IDC believes that the nascent decision intelligence market for payers is undergoing a transition and will continue to evolve with the prevalence of data and decision platforms and modular learning agents, blended organizations, and home health care into the payer/provider/pharma ecosphere.

To the extent that Exponential AI can address the challenges described in this paper, the company has a meaningful opportunity for success.

About the Analyst

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Jeff Rivkin is Research Director of Payer IT Strategies for IDC Health Insights. In that role, he is responsible for research coverage on payer business and technology priorities; constituent and consumer engagement strategies; technology and business implications for consumer engagement; front-, middle-, and back-office functions; value-based reimbursement; risk; and quality-based payment and incentive programs, among other trends and technologies important to the payer community.

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More About Exponential AI

Exponential AI is a leading Healthcare Decision Intelligence Platform Company, that empowers Healthcare organizations to make transparent, predictable and explainable machine decisions in real-time to drive zero-latency processes at scale. Exponential AI offers its production ready Healthcare Decision Intelligence Platform (Enso), integrated and reusable Decision Agent ecosystem, and a rich portfolio of healthcare solutions that enable clients to take control of their AI journeys.

Exponential AI's award-winning platform Enso simplifies and accelerates the overall life cycle of building, deploying, and scaling enterprise-grade decision intelligence solutions, accelerating AI adoption at the enterprise level. The platform is currently deployed across a number of leading Health Plans and Pharma Companies, managing multiple real time applications across processes like Payment Integrity, Intelligent Claims Automation, Utilization Management, Pharmacovigilance, Contract Audit, etc.

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